1158-46-119   **Igor V. Nikolaev*** (`igor.v.nikolaev@gmail.com`). *Arithmetic complexity of noncommutative tori.* Preliminary report.

The noncommutative torus $\mathcal{A}_\theta$ is a C^*-algebra generated by two unitary operators U and V satisfying the relation $VU = e^{2\pi I\theta}UV$ for a real constant θ. We study a special case of the algebras $\mathcal{A}_\theta$ when θ is the irrational root of a quadratic polynomial with integer coefficients. It is well known, that in this case θ unfolds into an infinite periodic continued fraction. With the help of this fraction we introduce an integer number $c(\mathcal{A}_\theta)$ called an arithmetic complexity of the noncommutative torus. It is shown, that the $c(\mathcal{A}_\theta)$ is linked to the ranks r of elliptic curves $\mathcal{E}$ by a simple formula $r(\mathcal{E}) = c(\mathcal{A}_\theta) - 1$. Reference: arXiv:2002.10854 (Received February 26, 2020)

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